CURRENT LISTING OF THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Previously Presented) A method of forming a microcrystalline thin film, comprising:

supplying, during a first process, SiH_4 and H_2 to a chamber in which a substrate is located;

during the first process, applying an electric field to break down the SiH_4 to SiH_2;

supplying, during a second process, H_2 but not SiH_4 to the chamber;

depositing a portion of the microcrystalline thin film during the second process, wherein depositing the portion comprises adsorbing the SiH_2 to a surface of the substrate to form microcrystals, and wherein the portion of the microcrystalline thin film is formed without converting amorphous silicon to the microcrystals; and

performing the first process and second process a plurality of times to form the microcrystalline thin film having a target film thickness on the substrate.

2. (Cancelled)

3. (Previously Presented) The method of claim 1, wherein performing the first process and second process a plurality of times is performed without removing the substrate from the chamber.

4. (Previously Presented) The method of claim 26, further comprising applying an electric field in the chamber to break down the SiH_4 to SiH_2.

5. (Previously Presented) The method of claim 4, wherein supplying the H_2 comprises supplying the H_2 at a generally constant rate.

6. (Original) The method of claim 4, further comprising depositing the SiH_2 to a surface of the substrate during the second process.

7. (Previously Presented) The method of claim 26, further comprising:
converting SiH_4 to SiH_2; and
depositing SiH_2 on the substrate during the second process.

8. (Previously Presented) The method of claim 7, wherein depositing SiH_2 on the substrate during the second process without supplying SiH_4 reduces formation of a polymer due to SiH_2 molecules encountering each other prior to depositing of SiH_2 on the substrate.

9. (Cancelled)

10. (Previously Presented) The method of claim 28, wherein bonding of SiH_2 is suppressed in the source depositing process.

11. (Cancelled)

12. (Previously Presented) The method of claim 28, wherein H_2 is supplied at a constant flow rate throughout said source supplying process and said source depositing process.

13. (Previously Presented) The method of claim 28, wherein a flow rate ratio, r, of SiH_4 and H_2 satisfies $r \geq -(7/12)xP+72.5$, where P is an electric field intensity density irradiated on SiH_4 and H_2.

14. (Previously Presented) The method of claim 28, wherein performing said source supplying process comprises performing the source supplying process for 2 seconds or less, and performing said source depositing process comprises performing said source depositing process for longer than said source supplying process.

15.-16. (Cancelled)

17. (Previously Presented) A method of manufacturing a thin film transistor comprising:

forming a gate electrode on the substrate;

forming an insulation layer film on said substrate and said gate electrode,

forming at least a portion of a channel layer film on said insulation layer by using the microcrystalline thin film forming method of claim 28; and

forming a source/drain electrode on said channel layer.

18. (Previously Presented) The method of manufacturing a thin film transistor of claim 17, wherein forming the channel layer film comprises forming the microcrystalline thin film up to 1 nm away into the channel layer film from the interface with said insulation layer.

19.-25. (Cancelled)

26. (Previously Presented) A method of forming a microcrystalline thin film, comprising:

supplying, during a first process, SiH_4 and H_2 to a chamber in which a substrate is located;

supplying, during a second process, H_2 but not SiH_4 to the chamber;

depositing a portion of the microcrystalline thin film during the second process; and

performing the first process and second process a plurality of times to form the microcrystalline thin film having a target film thickness on the substrate,

wherein supplying SiH_4 and H_2 during the first process comprises supplying SiH_4 at a first rate and H_2 at a second rate, the first rate and second rate defining a flow rate ratio that prevents a thin film formed on the substrate from becoming amorphous.

27. (Previously Presented) The method of claim 26, further comprising applying an electric field during the first process, the electric field set at an intensity that in combination with the flow rate ratio prevents a thin film formed on the substrate from becoming amorphous.

28. (Previously Presented) A method of forming a microcrystalline thin film by activating SiH_4, and forming a film having a microcrystalline structure on a film forming target object, wherein activating SiH_4 comprises applying an electric field to break down SiH_4 to SiH_2, the method further comprising:

performing a source supplying process in which SiH_4 is supplied,

performing a source depositing process in which the supply of SiH_4 is stopped and SiH_2 is deposited on the film forming target object to form the microcrystalline structure, and

supplying H_2 during the source supplying process and during the source depositing process, SiH_4 and H_2 being supplied at flow rates during the source supplying process to prevent a film formed on the film forming target object from becoming amorphous.

29. (Previously Presented) A method of forming a microcrystalline thin film, comprising:

supplying, during a source supplying process, SiH_4 and H_2 to a chamber in which a substrate is located, wherein the SiH_4 is supplied at a first rate and the H_2 is supplied at a second rate, the first and second rates defining a flow rate ratio to prevent formation of a layer of an amorphous film during the source supplying process; and

depositing the microcrystalline thin film on the substrate, wherein prior to depositing the microcrystalline thin film, the supplying of SiH_4 to the chamber is stopped.

30. (Previously Presented) The method of claim 29, further comprising:

applying an electric field in the chamber during the source supplying process to break down SiH_4 to SiH_2 molecules,

wherein depositing the microcrystalline thin film is performed during a source depositing process, and wherein a majority of the SiH_2 molecules is adsorbed on the substrate during the source depositing process to deposit the microcrystalline thin film on the substrate.

31. (Previously Presented) A method of forming a microcrystalline thin film, comprising:

supplying SiH_4 and H_2 to a chamber in which a substrate is located; and

depositing the microcrystalline thin film on the substrate, wherein prior to depositing the microcrystalline thin film, the supplying of SiH_4 to the chamber is stopped,

wherein supplying SiH_4 and H_2 comprises supplying SiH_4 at a first rate and H_2 at a second rate, the first rate and second rate defining a flow rate ratio that prevents a thin film formed on the substrate from becoming amorphous.